

WE CLAIM:

Subt
B'
a

1. A method for treating a vision disorder, improving vision, treating memory impairment, or enhancing memory performance in an animal, which comprises administering to said animal an effective amount of a heterocyclic ester or amide, ^{compound}

Subt
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2. The method of claim 1, wherein the heterocyclic ester or amide is immunosuppressive or non-immunosuppressive.

3. The method of claim 1, wherein the heterocyclic ester or amide has an affinity for an FKBP-type immunophilin.

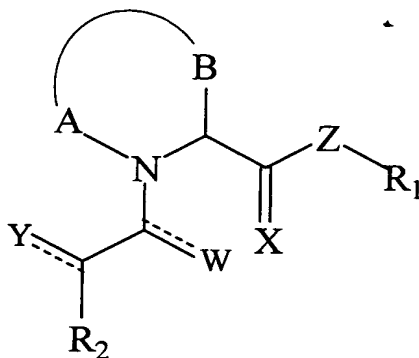
4. The method of claim 3, wherein the FKBP-type immunophilin is FKBP-12.

5. The method of claim 1, wherein the vision disorder is selected from the group consisting of: visual impairments; orbital disorders; disorders of the lacrimal apparatus; disorders of the eyelids; disorders of the conjunctiva; disorders of the cornea; cataract; disorders of the uveal tract; disorders of the retina; disorders of the optic nerve or visual pathways; free radical induced eye disorders and diseases; immunologically-mediated eye

disorders and diseases; eye injuries; and symptoms and complications of eye ~~disease~~, eye disorder, or eye injury.

6. The method of claim 1, which is for improving naturally-occurring vision in an animal, in the absence of any ophthalmologic disorder, disease, or injury.

7. The method of claim 1, wherein the heterocyclic ester or amide is a compound of formula I



I

or a pharmaceutically acceptable salt, ester, or solvate thereof, wherein:

A and B, together with the nitrogen and carbon atoms to which they are respectively attached, form a 5-7 membered saturated or unsaturated heterocyclic ring containing, in addition to the nitrogen atom, one or more additional O, S, SO, SO₂, N, NH, or NR₁ heteroatom;

X is O or S;

Z is O, NH, NR₁, or a bond

W and Y are independently O, S, CH₂, or H₂;

R₁ is C₁-C₆ straight or branched chain alkyl or C₂-C₆

straight or branched chain alkenyl, which is substituted with one or more substituent(s) independently selected in one or more position(s) with $(Ar_1)_n$, C_1-C_6 straight or branched chain alkyl or C_2-C_6 straight or branched chain alkenyl substituted with $(Ar_1)_n$, C_3-C_8 cycloalkyl, C_1-C_6 straight or branched chain alkyl or C_2-C_6 straight or branched chain alkenyl substituted with C_3-C_8 cycloalkyl, and Ar_2 ;

n is 1 or 2;

R_2 is either C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_3-C_8 cycloalkyl, C_5-C_7 cycloalkenyl or Ar_1 , wherein said alkyl, alkenyl, cycloalkyl or cycloalkenyl is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of C_1-C_4 straight or branched chain alkyl, C_2-C_4 straight or branched chain alkenyl, and hydroxy; and

Ar_1 and Ar_2 are independently an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of halo, hydroxy, nitro, trifluoromethyl, C_1-C_6 straight or branched chain alkyl, C_2-C_6 straight or branched chain alkenyl, C_1-C_4 alkoxy, C_2-C_4 alkenyloxy, phenoxy, benzyloxy, and amino; wherein the individual ring size is 5-6 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) independently selected from the group consisting of O, N, and S.

B 8. The method of claim ~~7~~²², wherein the mono- or bicyclic, carbo- or heterocyclic ring is selected from the group consisting of naphthyl, indolyl, furyl, thiazolyl, thienyl, pyridyl, quinolinyl, isoquinolinyl, fluorenyl, and
5 phenyl.

B 9. The method of claim ~~7~~²², wherein the one or more additional heteroatom(s) in the 5-7 membered saturated or unsaturated heterocyclic ring is NH or NR₁.

10. The method of claim 1, wherein the vision disorder is selected from the group consisting of: visual impairments; orbital disorders; disorders of the lacrimal apparatus; disorders of the eyelids; disorders of the conjunctiva; disorders of the cornea; cataract; disorders of the uveal tract; disorders of the retina; disorders of the optic nerve or visual pathways; free radical induced eye disorders and diseases; immunologically-mediated eye disorders and diseases; eye injuries; and symptoms and
10
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20 complications of eye disease, eye disorder, or eye injury.

11. The method of claim 10, wherein vision regeneration is undertaken to improve naturally-occurring vision in an animal, in the absence of any ophthalmologic
25 disorder, disease, or injury.

~~12. A pharmaceutical composition which comprises:~~

- (i) an effective amount of a heterocyclic ester or amide for treating a vision disorder, improving vision, treating memory impairment, or enhancing memory performance in an animal; and
- 5 (ii) a pharmaceutically acceptable carrier.

13. The pharmaceutical composition of claim 12, wherein the heterocyclic ester or amide is immunosuppressive or non-immunosuppressive.

10 14. The pharmaceutical composition of claim 12, wherein the heterocyclic ester or amide has an affinity for an FKBP-type immunophilin.

15 15. The pharmaceutical composition of claim 14, wherein the FKBP-type immunophilin is FKBP-12.

16. The pharmaceutical composition of claim 12, wherein the vision disorder is selected from the group

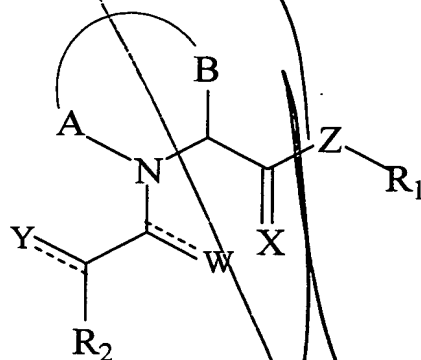
20 consisting of: visual impairments; orbital disorders; disorders of the lacrimal apparatus; disorders of the eyelids; disorders of the conjunctiva; disorders of the cornea; cataract; disorders of the uveal tract; disorders of the retina; disorders of the optic nerve or visual pathways;

25 free radical induced eye disorders and diseases; immunologically-mediated eye disorders and diseases; eye injuries; and symptoms and complications of eye disease, eye

disorder, or eye injury.

17. The pharmaceutical composition of claim 12, which is for improving naturally-occurring vision in an animal, in the absence of any ophthalmologic disorder, disease, or injury.

18. The pharmaceutical composition of claim 12, wherein the heterocyclic ester or amide is a compound of formula I



or a pharmaceutically acceptable salt, ester, or solvate thereof; wherein:

15 A and B, together with the nitrogen and carbon atoms to which they are respectively attached, form a 5-7 membered saturated or unsaturated heterocyclic ring containing, in addition to the nitrogen atom, one or more additional O, S, SO, SO₂, N, NH, or NR₁ heteroatom;

20 X is O or S;

Z is O, NH, or NR₁;

W and Y are independently O, S, CH₂, or H₂;

R_1 is C_1 - C_6 straight or branched chain alkyl or C_2 - C_6 straight or branched chain alkenyl, which is substituted with one or more substituent(s) independently selected from the group consisting of $(Ar_1)_n$, C_1 - C_6 straight or branched chain alkyl or C_2 - C_6 straight or branched chain alkenyl substituted with $(Ar_1)_n$, C_3 - C_8 cycloalkyl, C_1 - C_6 straight or branched chain alkyl or C_2 - C_6 straight or branched chain alkenyl substituted with C_3 - C_8 cycloalkyl, and Ar_2 ;

n is 1 or 2;

R_2 is either C_1 - C_4 straight or branched chain alkyl, C_2 - C_9 straight or branched chain alkenyl, C_3 - C_8 cycloalkyl, C_5 - C_7 cycloalkenyl or Ar_1 , wherein said alkyl, alkenyl, cycloalkyl or cycloalkenyl is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of C_1 - C_4 straight or branched chain alkyl, C_2 - C_4 straight or branched chain alkenyl, and hydroxy; and

Ar_1 and Ar_2 are independently an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of halo, hydroxy, nitro, trifluoromethyl, C_1 - C_6 straight or branched chain alkyl, C_2 - C_6 straight or branched chain alkenyl, C_1 - C_4 alkoxy, C_2 - C_4 alkenyloxy, phenoxy, benzyloxy, and amino; wherein the individual ring size is 5-6 members; and wherein the heterocyclic ring contains 1-6 heteroatom(s) independently selected from the group consisting of O, N, and S.

19. The pharmaceutical composition of claim 18,
wherein the mono- or bicyclic, carbo- or heterocyclic ring
is selected from the group consisting of naphthyl, indolyl,
furyl, thiazolyl, thienyl, pyridyl, quinolinyl,
5 isoquinolinyl, fluorenyl, and phenyl.

20. The pharmaceutical composition of claim 18,
wherein the one or more additional heteroatom(s) in the 5-7
membered saturated or unsaturated heterocyclic ring is NH or
10 NR₁.

add
a₄

add
B₂